April 17, 2019

Jason Griscom, PE
STV
900 W Trade Street
Charlotte, NC 28202

Project:	15406.2009455 (SF-080036)
County:	Robeson
Project Description:	Emergency Bridge Replacement of Bladen County Bridge No. 36
Site Description:	Bridge No. 36 on -L- (SR 1747) Over Kitchen's Branch
Subject:	Foundation Recommendations

Dear Mr. Griscom:

As authorized, Falcon Engineering Inc. (Falcon) has completed the Structure Foundation Recommendations for the above referenced project based on current NCDOT LRFD bridge design policy and procedures.

Foundation recommendations, notes on plans, and pay item quantities are presented in the attachments. These recommendations are based on subsurface data obtained by others as presented in the Subsurface Investigation Report. Structure foundation loads considered in our analyses were based on Standard Load Tables.

Falcon appreciates the opportunity to have provided STV with geotechnical engineering services. If you have any questions concerning the contents of this report or need additional information, please do not hesitate to contact our office.

Respectfully submitted:

FALCON ENGINEERING, INC.

Stephen Crockett, PE
Geotechnical Engineer

Jeremy R. Hamm, PE
Geotechnical Engineering Manager

Attachments: Foundation Recommendations
Notes on Plans
Pay Item Quantities

FOUNDATION RECOMMENDATIONS

Prepared for NCDOT by: Falcon Engineering

WBS # DF15406.2009455

T.I.P. NO. SF-080036

COUNTY Bladen

STATION 13+97 -L-

DESCRIPTION Bridge No. 36 on -L- (SR 1747) Over Kitchen's Branch

	INITIALS	DATE
DESIGN	SCC	4/17/2019
CHECK	JRH	4/18/2019
APPROVAL		

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 039779 ENGINEER JEREMY R. HAMM

DocuSigned by:
Jeremy R Hamm
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SIGNATURE 4/18/2019

	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	MISCELLANEOUS DETAILS
END BENT NO. 1	13+60.88 -L-	Cap on HP 12x53 Steel Piles	100 tons/pile	Bottom of Cap Elev. = 46.9 ft Estimated Length of Pile = 70 ft Number of Vertical Piles = 5 Pile Spacing = 8 feet 3 inches
END BENT NO. 2	14+33.13 -L-	Cap on HP 12x53 Steel Piles	100 tons/pile	Bottom of Cap Elev. = 47.6 ft Estimated Length of Pile = 70 ft Number of Vertical Piles = 5 Pile Spacing = 8 feet 3 inches

TIP # SF-080036 **County** Bladen

FOUNDATION RECOMMENDATION NOTES ON PLANS

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. PILES AT END BENTS NO. 1 AND NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
3. DRIVE PILES AT END BENTS NO. 1 AND NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.
4. TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOUNDATION RECOMMENDATION COMMENTS

1. 1.5:1 (H:V) slopes at both end bents are ok with slope protection.
2. The factored axial load at End Bents No. 1 and No. 2 is 97 tons per pile.
3. Recommend Type II - Modified Bridge Approach Fills. See 2018 Roadway Standard Drawing 422.02.

PILE PAY ITEMS

(Revised 8/15/12)

WBS ELEMENT DF15406.2009455 DATE 4/17/2019

TIP NO. SF-080036 DESIGNED BY SCC

COUNTY Bladen CHECKED BY JRH

STATION 13+97 -L-

DESCRIPTION Bridge No. 36 on -L- (SR 1747) Over Kitchen's Branch

NUMBER OF BENTS WITH PILES

NUMBER OF PILES PER BENT

NUMBER OF END BENTS WITH PILES

NUMBER OF PILES PER END BENT

Only required for "Predrilling for Piles" & "Pile Excavation" pay items

	PILE PAY ITEM QUANTITIES						
					Pile Excavation (per linear ft)		
Bent # or End Bent #	Steel Pile Points (yes/no)	Pipe Pile Plates (yes/no/maybe)	Predrilling For Piles (per linear ft)	Pile Redrives (per each)	In Soil	Not In Soil	PDA Testing (per each)
End Bent # 1	no			3			
End Bent # 2	no			3			
TOTALS			0	6	0	0	1

Notes:

Blanks or "no" represent quantity of zero.

If steel pile points are required, calculate quantity of "Steel Pile Points" as equal to the number of steel piles.

If pipe pile plates are or may be required, calculate the quantity of "Pipe Pile Plates" as equal to the number of pipe piles.

Show quantity of "PDA Testing" on the plans as total only.